REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 3, 11, 13, and 14 are currently pending, Claims 1 and 11 having been amended, and Claims 2 and 12 having been canceled without prejudice or disclaimer. The changes and additions to the claims do not add new matter and are supported by the originally filed specification, for example, on original Claims 2 and 12; and page 7, lines 25-30.

In the outstanding Office Action, Claims 1 and 11 were rejected under 35 U.S.C. §102(e) as being anticipated by Zhu et al. (U.S. Patent No. 7,043,210, hereafter "Zhu"); and Claims 2-4 and 12-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zhu in view of Golitschek et al. (WO 02/067491, hereafter "Golitschek").

With respect to the rejection of Claim 1 under 35 U.S.C. §102(e), Applicants respectfully submit that the amendment to Claim 1 overcomes this ground of rejection.

Amended Claim 1 recites, *inter alia,*

> a sampling pattern generating unit configured to generate a sampling pattern for each of multiple types of modulation techniques, the sampling pattern representing information about a sampling period for acquiring discrete data along a temporal axis and information about a sampling space for acquiring discrete data along an amplitude direction;
>
> a modulation unit configured to modulate data in a hierarchical manner using the multiple types of modulation techniques based on the sampling pattern and to produce hierarchically modulated data that includes signal states for the multiple types of modulation techniques, such that a portion of a bit sequence which represents constellation points in a constellation plane in accordance with a first modulation technique of the modulation techniques is identical with a bit sequence which represents constellation points in a constellation plane in accordance with a second modulation technique of the modulation techniques.

Applicants respectfully submit that Zhu and Golitschek fail to disclose or suggest these features of amended Claim 1.

Zhu is directed to adaptive coding and modulation. Fig. 2 shows a base station which includes a baseband processor 22 and transmit circuitry 24 to perform modulation on data to be transmitted (see col. 4, lines 53-60). Zhu describes incorporating a hierarchal coding and modulating scheme where there are 4 bits (B0, B1, B2, and B3) to be modulated. Zhu describes that the two most significant bits of data (B0 and B1) are modulated using QPSK modulation and the remaining two bits of data (B2 and B3) are modulated using 16QAM modulation (see col. 5, lines 7-14).

With regard to previous Claim 2, the Office Action acknowledges that Zhu fails to disclose or suggest a "sampling pattern generating unit." (See Office Action, at page 6).

Therefore, Applicants submit that Zhu also fails to disclose or suggest "a sampling pattern generating unit configured to generate a sampling pattern for each of multiple types of modulation techniques, the sampling pattern representing information about a sampling period for acquiring discrete data along a temporal axis and information about a sampling space for acquiring discrete data along an amplitude direction," as defined by amended Claim 1.

Thus, Applicants respectfully submit that amended Claim 1 (and all associated dependent claims) patentably distinguishes over Zhu.

Applicants note that the Office Action relies on Golitschek to disclose a "sampling pattern generating unit" and remedy the deficiencies of Zhu with regard to previous Claim 2.

Golitschek is directed to a hybrid ARQ method with a single constellation rearrangement. Fig. 5 of Golitschek shows a communication system with a transmitter 10 which communicates with a receiver 20 over a channel 30. Data packets are supplied from a

data source 11 to a FEC encoder 12, where redundancy bits are added to correct errors (see bottom of page 16 of Golitschek). The n bits are output from the FEC encoder to a mapping unit 13, which acts as a modulator to output symbols formed according to an applied modulation scheme stored as a constellation pattern in table 15. After receiving a transmission over channel 30, the receiver 20 checks the received packet for correctness. If there is an error, a retransmission is launched by an automatic repeat request (see page 17). Fig. 6 shows that the table 15 stores a plurality of constellation patterns which are selected for the individual re-retransmissions according to a pre-determined scheme. The constellation patterns are either pre-stored in the transmitter or receiver, or signaled by the transmitter to the receiver prior to usage (see page 17).

The Office Action takes the position that the "unit 15" of Golitschek corresponds to the claimed sampling pattern generating unit. As discussed above, the element 15 of Fig. 5 is a table, storing a plurality of signal constellation patterns, which is pre-stored in the transmitter or receiver or sent from the transmitter to the receiver. However, the table 15 is not actually a "sampling pattern generating unit," as defined by amended Claim 1 Additionally, Golitschek does not explicitly describe using sampling patterns representing information about a sampling period for acquiring discrete data along a temporal axis and information about a sampling space for acquiring discrete data along an amplitude direction.

Therefore, Applicants submit that Golitschek fails to disclose or suggest "a sampling pattern generating unit configured to generate a sampling pattern for each of multiple types of modulation techniques, the sampling pattern representing information about a sampling period for acquiring discrete data along a temporal axis and information about a sampling space for acquiring discrete data along an amplitude direction," as defined by amended Claim 1.

Therefore, Applicants submit that Golitschek fails to remedy the deficiencies of Zhu with regard to amended Claim 1. Thus, Applicants submit that the combination of Zhu and Golitschek fails to provide the advantages of the modulation device of Claim 1, which allows for a corresponding demodulation device to be simplified by having a modulation function of a specific hierarchy instead of having to have multiple types of demodulation functions (see specification, at page 14, lines 26-31).

Therefore, Applicants respectfully submit that amended Claim 1 (and all associated dependent claims) patentably distinguishes over Zhu and Golitschek, either alone or in proper combination.

Amended independent Claim 11 recites features similar to those of Claim 1 discussed above. Therefore, Applicants respectfully submit that amended Claim 11 (and all associated dependent claims) patentably distinguishes over Zhu and Golitschek, either alone or in proper combination.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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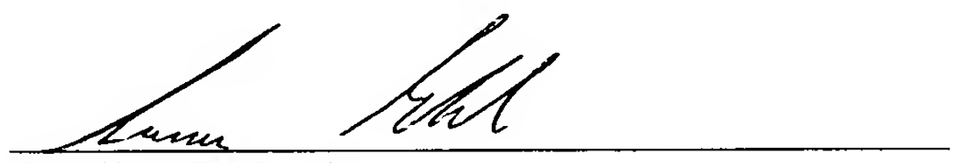

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